Calibrating Your Thermometer

Now that you have made your thermometer, it's time to calibrate it with a thermometer that includes a scale. The two most commonly used scales are Fahrenheit and Celsius, which were invented in the early to mid-1700s by scientists named Daniel Fahrenheit and Anders Celsius.

Procedure

1. Create your ice-water bath by filling half your beaker with water and crushed ice. Make sure that there is enough ice in the beaker to chill the water but not so much that you cannot set your thermometer in the beaker.
2. Put your bulb thermometer and reference thermometer in the container of ice water so that it is mostly—but not fully—submerged in the ice water. When the liquid in the your thermometer stabilizes (it takes about five minutes), mark the index card next to the height of the liquid and label it "ice water." Write the temperature on the reference thermometer next to this mark.
3. Move both thermometers to the warm water bath. Once again mark the appropriate spot on the index card when the liquid in your thermometer stops moving (it takes about ten minutes). Write down "warm water" and the temperature from the reference thermometer next to this mark.
4. Draw a line halfway between the two spots and label it with the number halfway between your high number and low number. Continue to add a few extra lines in this way: Mark a spot halfway between two other lines, and label it with a number halfway between those two numbers.
5. Look at the scale that your reference thermometer uses and mark the card above your measurements with that scale (°C for Celsius and °F for Fahrenheit). Convert the temperatures you measured from one scale to the other using one of the formulas in the "Conversion Formulas" sidebar. Write the second set of temperatures on the opposite side of the index card and label that scale.

Conversion Formulas

Celsius to Fahrenheit
Multiply the Celsius temperature by 9. Divide the answer by 5. Add 32.

Fahrenheit to Celsius
Subtract 32 from the Fahrenheit number. Divide the answer by 9. Multiply by 5.